

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original) A Raman amplification method for pumping WDM signal light within an optical fiber, that uses pumping lights having two or more different pumping wavelengths, comprising steps of:

calculating a combination of optical power at said two or more different pumping wavelengths for said pumping lights in backward pumping so as to provide a substantially flat Raman gain within a predetermined signal wavelength band;

carrying out bidirectional pumping with at least part of said pumping lights wherein said bidirectional pumping includes said backward pumping; and

changing a respective distribution of pumping power to wavelength of said bidirectional pumping.

Claim 2 (Original) The Raman amplification method according to Claim 1, wherein:
a total optical power of said bidirectional pumping is not changed from the combination of optical power of said backward pumping calculated in said calculating step.

Claim 3 (Original) The Raman amplification method according to Claim 2, wherein:
all of said pumping lights are used for backward pumping and part of said pumping lights are used for forward pumping.

Claim 4 (Original) The Raman amplification method according to Claim 3, wherein:
shorter wavelengths of said pumping lights are used for forward pumping.

Claim 5 (Original) The Raman amplification method according to Claim 4, wherein:

the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 6 (Currently Amended) The Raman amplification method according to Claim 5, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an ~~LD~~ a laser diode with a grating structure.

Claim 7 (Currently Amended) The Raman amplification method according to Claim 4, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an ~~LD~~ a laser diode with a grating structure.

Claim 8 (Original) The Raman amplification method according to Claim 3, wherein:
the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 9 (Currently Amended) The Raman amplification method according to Claim 8, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an ~~LD~~ a laser diode with a grating structure.

Claim 10 (Currently Amended) The Raman amplification method according to Claim 3, further comprising:

performing forward pumping with at least one multi-mode pumping laser having ~~an~~
~~LD~~ a laser diode with a grating structure.

Claim 11 (Original) The Raman amplification method according to Claim 2, wherein:
shorter wavelengths of said pumping lights are used for forward pumping.

Claim 12 (Original) The Raman amplification method according to Claim 11,
wherein:
the combination of optical power of backward pumping is larger than that of forward
pumping.

Claim 13 (Currently Amended) The Raman amplification method according to Claim
12, further comprising:
performing forward pumping with at least one multi-mode pumping laser having ~~an~~
~~LD~~ a laser diode with a grating structure.

Claim 14 (Currently Amended) The Raman amplification according to Claim 11,
further comprising:
performing forward pumping with at least one multi-mode pumping laser having ~~an~~
~~LD~~ a laser diode with a grating structure.

Claim 15 (Original) The Raman amplification method according to Claim 2, wherein:
the combination of optical power of backward pumping is larger than that of forward
pumping.

Claim 16 (Currently Amended) The Raman amplification method according to Claim 15, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an ~~LD~~ a laser diode with a grating structure.

Claim 17 (Currently Amended) The Raman amplification method according to Claim 2, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an ~~LD~~ a laser diode with a grating structure.

Claim 18 (Original) The Raman amplification method according to Claim 1, wherein:
all of said pumping lights are used for backward pumping and part of said pumping lights are used for forward pumping.

Claim 19 (Original) The Raman amplification method according to Claim 18, wherein:

shorter wavelengths of said pumping lights are used for forward pumping.

Claim 20 (Original) The Raman amplification method according to Claim 19, wherein:

the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 21 (Currently Amended) The Raman amplification method according to Claim 20, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an
~~LD~~ a laser diode with a grating structure.

Claim 22 (Currently Amended) The Raman amplification method according to Claim
19, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an
~~LD~~ a laser diode with a grating structure.

Claim 23 (Original) The Raman amplification method according to Claim 18,
wherein:

the combination of optical power of backward pumping is larger than that of forward
pumping.

Claim 24 (Currently Amended) The Raman amplification method according to Claim
23, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an
~~LD~~ a laser diode with a grating structure.

Claim 25 (Currently Amended) The Raman amplification method according to Claim
18, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an
~~LD~~ a laser diode with a grating structure.

Claim 26 (Original) The Raman amplification method according Claim 1, wherein:
shorter wavelengths of said pumping lights are used for forward pumping.

Claim 27 (Original) The Raman amplification method according to Claim 26,
wherein:

the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 28 (Currently Amended) The Raman amplification method according to Claim 27, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an ~~LD~~ a laser diode with a grating structure.

Claim 29 (Currently Amended) The Raman amplification method according to Claim 26, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an ~~LD~~ a laser diode with a grating structure.

Claim 30 (Original) The Raman amplification method according to Claim 1, wherein:
the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 31 (Currently Amended) The Raman amplification method according to Claim 30, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an ~~LD~~ a laser diode with a grating structure.

Claim 32 (Currently Amended) The Raman amplification method according to Claim 1, further comprising:

performing forward pumping with at least one multi-mode pumping laser having ~~an~~ LD a laser diode with a grating structure.

Claim 33 (Original) An optical transmission system that transmits a WDM optical signal through an optical transmission path comprising:

an optical transmitter configured to output said WDM optical signal into said optical transmission path;

two or more Raman amplifiers that are connected to said optical transmission path in series, and configured to Raman-amplify said WDM optical signal; and

an optical receiver configured to receive said WDM optical signal propagated through said optical transmission path, wherein:

at least one of said two or more Raman amplifiers is configured to adjust a wavelength characteristic of noise figure to provide a predetermined wavelength characteristic of noise figure for receiving said WDM optical signal at said optical receiver.

Claim 34 (Original) The optical transmission system according to Claim 33 wherein:
one of said Raman amplifiers is configured to adjust a wavelength characteristic of noise figure by way of bidirectional pumping.

Claim 35 (Original) The optical transmission system according to Claim 34 wherein:
all pumping lights in said Raman amplifier are used for backward pumping and shorter wavelengths of the pumping lights are used for forward pumping.

Claim 36 (Currently Amended) The optical transmission system according to Claim 35 wherein:

the wavelength characteristic of noise figure at said shorter wavelengths is substantially due to the backward pumping, and only the backward pumping substantially provides a ~~same wavelength characteristic as that for the~~ Raman gain, and is approximately the same as a gain for when bidirectional pumping is performed with lights for ~~backward~~ forward pumping turned off on.